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09/553,990	04/20/2000	Youhao Xu	456962000200	5903

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EXAMINER

LEUNG, JENNIFER A

ART UNIT	PAPER NUMBER
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1764

DATE MAILED: 02/21/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/553,990

Applicant(s)

XU ET AL.

Examiner

Jennifer A. Leung

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☐ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☐ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on 20 April 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Specification

2. The disclosure is objected to because of the following informalities:
 - In the Abstract, line 4, “the” should be changed to -- The --.
 - On page 3, line 13, -- and -- should be inserted before “conduits”.
 - On page 3, line 19, “prelif” should be changed to -- prelift --.
 - On page 4, line 6, “th” should be changed to -- the --.
 - On page 4, line 9, “that that” should be changed to -- than that --.
 - On page 4, lines 13-15, “The conjunct section between the second reaction zone and the first reaction zone... whose vertical section isotrapezia base angle β ” should be changed to: -- The conjunct section between the second reaction zone and the outlet zone... whose vertical section isotrapezia base angle β -- , for consistency with the drawing.
3. The specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification. Appropriate correction is required.

Claim Objections

4. Claim 1 is objected to because of the following informalities: -- an -- should be inserted before “enlarged” (line 2); -- a -- should be inserted before “reduced” and before “coaxial” (line

3); and -- the-- should be inserted before "bottom" and before "top" (lines 3-4) for proper grammatical form. Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 1-8 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

With respect to claim 1, the applicants merely recite an aggregation of parts lacking in structural and functional interrelation, and therefore the claim is considered vague and indefinite. Furthermore, it is unclear as to the structural limitation the applicants are attempting to recite by, "reduced diameter along coaxial direction from bottom to top of the riser reactor."

With respect to claims 3-6, "the riser" lacks proper positive antecedent basis.

With respect to claims 7-8, "the conjunct section" lacks proper positive antecedent basis.

With respect to claim 5, it is unclear as to where, "the height of said first reaction zone is generally from about 30% to about 60%..." is disclosed in the specification. It appears that the term "first" is a typographical error, and that the applicants intended to recite, "the height of said second reaction zone is generally from about 30% to about 60%..." as evidenced by the specification (page 4, lines 9-12).

With respect to claim 6, it is unclear as to where, "the height of said first reaction zone is generally from about 0% to about 20%..." is disclosed in the specification. It appears that the term "first reaction" is a typographical error, and that the applicants intended to recite, "the

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height of said outlet zone is generally from about 0% to about 20%..." as evidenced by the specification (page 4, lines 16-20).

With respect to claim 8, it is unclear as to where, "the conjunct section between said first reaction zone and said outlet zone..." is disclosed in the specification. It appears that the term "first" is a typographical error, and that the applicants intended to recite, "the conjunct section between said second reaction zone and said outlet zone..." as evidenced by the Figure (conduit 8 comprising angle β).

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1 and 4-8 are rejected under 35 U.S.C. 102(b) as being anticipated by Dean et al. (U.S. 4,336,160).

With respect to claim 1, Dean et al. disclose a riser reactor comprising a prelift zone **44**, a first reaction zone **46**, a second reaction zone with enlarged diameter **48**, an outlet zone **50** with reduced diameter along a coaxial direction from bottom to top of the riser reactor, and the end of the outlet zone **50** connects to a horizontal tube **52** (FIG. I: column 13, lines 32-65).

With respect to claim 4, Dean et al. disclose by illustration (FIG. I) a diameter ratio of said first reaction zone **46** to said prelift zone **44** of about 1:1 to about 2:1 and a height of said first reaction zone **46** of generally from about 10% to about 30% of the height of the riser.

With respect to claim 5, Dean et al. disclose by illustration (FIG. 1) the diameter ratio of said second reaction zone **48** to said first reaction zone **46** is generally from about 1.5 to about

5:1, and the height of said second reaction zone **48** is generally from about 30% to about 60% of the height of the riser. Please note that although the claim specifically recites, "the height of said first reaction zone is generally from about 30% to about 60%..." the Examiner considers the term "first" a typographical error and thus interprets the claim on the basis that the applicants intended to recite, "the height of said second reaction zone is generally from about 30% to about 60%..." as evidenced by the specification (page 4, lines 9-12).

With respect to claim 6, Dean et al. disclose by illustration (FIG. 1) the diameter ratio of said outlet zone **50** to said first reaction zone **46** is generally from about 0.8:1 to about 1.5:1, and the height of said outlet zone **50** is generally from about 0% to about 20% of the height of the riser. Please note that although the claim specifically recites, "the height of said first reaction zone is generally from about 0% to about 20%..." the Examiner considers the term "first reaction" a typographical error and thus interprets the claim on the basis that the applicants intended to recite, "the height of said outlet zone is generally from about 0% to about 20%..." as evidenced by the specification (page 4, lines 16-20).

With respect to claim 7, Dean et al. disclose by illustration (FIG. 1) a conjunct section between the first reaction zone **46** and said second reaction zone **48**, wherein the conjunct section is a circular truncated cone whose vertical section isotrapezia forms a vertex angle alpha (α) generally about 30 degrees to 80 degrees.

With respect to claim 8, Dean et al. disclose by illustration (FIG. 1) a conjunct section between said second reaction zone **48** and said outlet zone **50**, wherein the conjunct section is a circular truncated cone whose vertical section isotrapezia forms a base angle beta (β) generally about 45 degrees to 85 degrees. Please note that although the claim specifically recites, "the

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conjunct section between said first reaction zone and said outlet zone..." the Examiner considers the term "first" a typographical error and thus interprets the claim on the basis that the applicants intended to recite, "the conjunct section between said second reaction zone and said outlet zone..." as evidenced by the Figure (conduit 8 comprising angle β).

Instant claims 1 and 4-8 structurally read on the apparatus of Dean et al.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dean et al. (U.S. 4,336,160) in view of Fahrig et al. (U.S. 4,295,961).

Although Dean et al. (FIG. 1) are silent as to whether the total height of said prelift zone 44, said first reaction zone 46, said second reaction zone 48 and said outlet zone 50 may measure

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generally from 10 meters to about 60 meters, it would have been an obvious design choice for one of ordinary skill in the art at the time the invention was made to select an appropriate dimension (such as a height of 10 meters to about 60 meters) for the total height in the apparatus of Dean et al., on the basis of suitability for the intended use and absent showing unexpected results thereof, since riser reactors of such dimension are conventionally known in the art, as evidenced by Fahrigh et al. In particular, Fahrigh et al. teach for a given industrial feed rate, a typical dimension for a riser reactor is 25 meters in height (column 4, lines 63-66). In any event, it has been held that changes in size involve only ordinary skill in the art. *In re Rose*, 220 F.2d 459, 463, 105 USPQ 237, 240 (CCPA 1955), and where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

8. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dean et al. (U.S. 4,336,160) in view of Applicant's Disclosed Prior Art.

Dean et al. disclose by illustration (FIG. 1) a prelift zone **44** having a height of about 5% to about 10% of the height of the riser. However, Dean et al. are expressly silent as to the specific prelift zone height. In any event, it would have been an obvious design choice for one of ordinary skill in the art at the time the invention was made to select an appropriate height for the prelift zone in the apparatus of Dean et al., on the basis of suitability for the intended use and absent showing any unexpected results thereof, since it has been held that changes in size involve only ordinary skill in the art. *In re Rose*, 220 F.2d 459, 463, 105 USPQ 237, 240 (CCPA 1955), and where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233. In

addition, Dean et al. are silent as to whether the diameter of the prelift zone may be from 0.02 meter to about 5 meters. However, as Applicant's Disclosed Prior Art teaches, "the diameter of the prelift zone is the same as that of a conventional isodiameter riser reactor and is generally from about 0.02 meter to about 5 meter." (page 3, lines 22-23). Therefore, it would have been an obvious design choice for one of ordinary skill in the art at the time the invention was made to select an appropriate diameter (such as a diameter from 0.02 meter to about 5 meters) for the prelift zone in the apparatus of Dean et al., on the basis of suitability for the intended use and absent showing any unexpected results thereof, since such prelift zone diameter is conventionally known in the art, as taught by Applicant's Disclosed Prior Art.

9. Claims 4-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dean et al. (U.S. 4,336,160).

With respect to claim 4, Dean et al. disclose by illustration (FIG. I) a diameter ratio of said first reaction zone **46** to said prelift zone **44** of about 1:1 to about 2:1 (i.e. a diameter ratio of 1:1). Dean et al. further disclose by illustration a height of said first reaction zone **46** of generally from about 10% to about 30% of the height of the riser reactor (i.e. about 30% the height of the riser reactor). Although Dean et al. do not expressly disclose the recited diameter ratios or height percentages, it would have been an obvious design choice for one of ordinary skill in the art at the time the invention was made to select an appropriate diameter ratio and first reaction zone height in the apparatus of Dean et al., on the basis of suitability for the intended use and absent showing any unexpected results thereof, since it has been held that changes in size involve only ordinary skill in the art. *In re Rose*, 220 F.2d 459, 463, 105 USPQ 237, 240 (CCPA 1955), and where the general conditions of a claim are disclosed in the prior art.

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discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

With respect to claim 5, Dean et al. disclose by illustration (FIG. 1) a diameter ratio of said second reaction zone **48** to said first reaction zone **46** of generally about 1.5 to about 5:1 (i.e. zone **48** having an enlarged diameter in comparison to the diameter of zone **46**), and a height of said second reaction zone **48** generally about 30% to about 60% of the height of the riser (i.e. about 40-50%). Although Dean et al. do not expressly disclose the recited diameter ratios or height percentages, it would have been an obvious design choice for one of ordinary skill in the art at the time the invention was made to select an appropriate diameter ratio and second reaction zone height in the apparatus of Dean et al., on the basis of suitability for the intended use and absent showing any unexpected results thereof, since it has been held that changes in size involve only ordinary skill in the art. *In re Rose*, 220 F.2d 459, 463, 105 USPQ 237, 240 (CCPA 1955), and where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233. Please note that although the claim specifically recites, "the height of said first reaction zone is generally from about 30% to about 60%..." the Examiner considers the term "first" a typographical error and thus interprets the claim on the basis that the applicants intended to recite, "the height of said second reaction zone is generally from about 30% to about 60%..." as evidenced by the specification (page 4, lines 9-12).

With respect to claim 6, Dean et al. disclose by illustration (FIG. 1) a diameter ratio of said outlet zone **50** to said first reaction zone **46** of generally about 0.8:1 to about 1.5:1, and a height of said outlet zone **50** generally about 0% to about 20% of the height of the riser.

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Although Dean et al. do not expressly disclose the recited diameter ratios or height percentages, it would have been an obvious design choice for one of ordinary skill in the art at the time the invention was made to select an appropriate diameter ratio and outlet zone height in the apparatus of Dean et al., on the basis of suitability for the intended use and absent showing any unexpected results thereof, since it has been held that changes in size involve only ordinary skill in the art. *In re Rose*, 220 F.2d 459, 463, 105 USPQ 237, 240 (CCPA 1955), and where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233. Please note that although the claim specifically recites, "the height of said first reaction zone is generally from about 0% to about 20%..." the Examiner considers the terms "first reaction" a typographical error and thus interprets the claim on the basis that the applicants intended to recite, "the height of said outlet zone is generally from about 0% to about 20%..." as evidenced by the specification (page 4, lines 16-20).

With respect to claim 7, Dean et al. (FIG. I) further discloses a conjunct section between the first reaction zone **46** and said second reaction zone **48**, wherein the conjunct section is a circular truncated cone whose vertical section is a trapezoid forming an undisclosed vertex angle α (α). Referring to the illustration, it appears that angle α lies generally between about 30 degrees to 80 degrees; however, Dean et al. are silent as to the specific angle measurement. In any event, it would have been an obvious design choice for one of ordinary skill in the art at the time the invention was made to select an appropriate angle measurement for angle α in the apparatus of Dean et al., on the basis of suitability for the intended use and absent showing any unexpected results thereof, since it has been held that changes in size involve only ordinary skill

in the art. *In re Rose*, 220 F.2d 459, 463, 105 USPQ 237, 240 (CCPA 1955); changes in shape involves only ordinary skill in the art. *In re Dailey* 149 USPQ 47, 50 (CCPA 1966); *Glue Co. v Upton* 97 US 3, 24 (USSC 1878); and where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

With respect to claim 8, Dean et al. (FIG. I) disclose a conjunct section between said second reaction zone **48** and said outlet zone **50**, wherein the conjunct section is a circular truncated cone whose vertical section isotrapezia forms an undisclosed base angle β . Referring to the illustration, it appears that the angle β lies generally between about 45 degrees to 85 degrees; however, Dean et al. are silent as to the specific angle measurement. In any event, it would have been an obvious design choice for one of ordinary skill in the art at the time the invention was made to select an appropriate angle measurement for angle β in the apparatus of Dean et al., on the basis of suitability for the intended use and absent showing any unexpected results thereof, since it has been held that changes in size involve only ordinary skill in the art. *In re Rose*, 220 F.2d 459, 463, 105 USPQ 237, 240 (CCPA 1955); changes in shape involves only ordinary skill in the art. *In re Dailey* 149 USPQ 47, 50 (CCPA 1966); *Glue Co. v Upton* 97 US 3, 24 (USSC 1878); and where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233. Please note that although the claim specifically recites, "the conjunct section between said first reaction zone and said outlet zone..." the Examiner considers the term "first" a typographical error and thus interprets the claim on the basis that the applicants intended to

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recite, "the conjunct section between said second reaction zone and said outlet zone..." as evidenced by the Figure (conduit 8 comprising angle β).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jennifer A. Leung whose telephone number is 703-305-4951. The examiner can normally be reached on 8:30 am - 5:30 pm M-F, every other Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn A. Caldarola can be reached on 703-308-6824. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

Jennifer A. Leung
February 14, 2003 JAL

Hien Tran
HIEU TRAN
SENIOR EXAMINER